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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/057,406

04/08/98

WERENICZ

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94-36-3-US-D

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EXAMINER

AFTERGUT, J

ART UNIT

PAPER NUMBER

1733

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06/07/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/057,406

Applicant(s)
Werenicz et al

Examiner
Jeff Aftergut

Group Art Unit
1733



☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-13 and 33-42 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-13 and 33-42 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☒ received in Application No. (Series Code/Serial Number) 08/705,578.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3,4,5

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

2. Claims 33, 36, 37, and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Boger et al.

Boger et al taught a process for non-contact coating a substrate with a hot melt adhesive composition. The process included supplying a hot melt adhesive composition (in a molten state) to a slot nozzle of the coating device 30. The device includes means for making the composition flowable which include a pump, a pressure pot, or other suitable devices, column 7, lines 26-32. The process additionally included the advancement of a substrate which in this case was a circuit board with mounted electronic components thereon where the circuit board 10 bearing the components 11 was passed in the direction of the arrow past the coating device, see column 4, lines 36-41. The reference additionally taught that one dispensed a continuous film 12 of the hot melt adhesive from the device 30 onto the substrate 10. As described the slot nozzle is a non-contacting slot nozzle and as depicted the nozzle is disposed a short distance from the substrate 10. The reference therefore clearly suggested that the film was suspended (it was

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hanging) from the slot nozzle 30 to the substrate 10 and then applied upon the substrate. The reference taught that the device for applying the hot melt adhesive included a slot nozzle. The device additionally taught that the weight of the coating could have been as low as 1 g/mm² and that the speed of application could have been as high as 350 meters/minute, see column 11, lines 1-9.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-6, 8-12, 33, 35-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanfleben et al in view of Boger et al.

Sanfleben et al taught a process for applying a conformal coating onto a circuit board bearing a plurality of electronic components thereon. The process included the application of hot melt adhesive compositions utilizing any conventional technique for application of the hot melt adhesive upon the substrate bearing the electronic components, see column 15, lines 44-61. The reference taught that the hot melt adhesive which was applied as the conformal coating would have been fluid at temperatures as low as 40 degrees C, column 4, lines 22-27. The reference additionally taught that the hot melt coatings would have had a viscosity of less than 1000 cps (10

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poise) and preferably less than 250 cps (2.5 poise)., see column 4, lines 35-40. The reference additionally taught that the hot melt coatings would have included amorphous polyolefins (which applicant's noted had a large window for application). The reference additionally taught that the viscosities be in the range of less than 1000 cps when applied at its elevated temperature (which would have been the temperature the material exited the coating device). The reference failed to expressly show the non-contact coating means useful in the operation, however it did suggest that an extrusion operation would have been useful for the application of the hot melt adhesive and that conventionally known techniques for the application of hot melt adhesives would have been used.

The reference to Boger et al taught the application of a hot melt adhesive conformal coating upon a circuit board bearing a plurality of electronic components wherein the coating was applied with a slot nozzle of an extruder device and wherein the device did not contact the substrate during the coating operation. The reference to Boger et al is discussed in detail above in paragraph 2 and applicant is referred to the same for a complete discussion of the reference. The process of Boger et al included the steps of passing (advancing) a circuit board bearing a plurality of electronic components thereon past a slot nozzle where a hot melt adhesive coating was applied upon the board and the components (a conformal coating). The reference taught that the nozzle was not in contact with the substrate and that one skilled in the art would have been able to apply coatings of 1 g/ m² upon the substrate at operating speeds of up to 350 meters/minute. The coatings are in the form of a film which were applied upon the substrate bearing the

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components thereon and the purpose of the film was to protect the components (the same type of coating as was applied by Sanftleben et al. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the techniques of Boger et al to quickly and efficiently apply a continuous film coating upon a circuit board in the manufacture of a board bearing a conformal coating wherein the hot melt coating composition which was applied included those materials taught by Sanftleben et al.

Regarding claims 3, 4, 6, and 35, the applicant is advised that the slot nozzle of Boger et al is noncontacting and that as depicted the spacing between the substrate and the slot nozzle appears to be extremely small. Certainly the amount of the spacing would have been determined through routine experimentation and those skilled in the art would have understood such would have effected the final product (and the viscosity of the material will change from the nozzle to the substrate, for instance). Clearly one would have envisioned a short distance within the specified ranges. Regarding claims 10-12 and 39-41, the applicant is advised that the compositions used by Sanftleben et al had a useful temperature range which included temperatures as low as 40 degrees C.

5. Claims 2 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 4 further in view of Reynolds.

The references as set forth above in paragraph 4 suggested that one would have applied the hot melt adhesive conformal coating upon a circuit board which was bearing electronic components, however there is no evidence as to what the composition of the circuit board was.

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However, it was well known in the art of circuit boards to apply electronic components upon a circuit board which had a core of aluminum and a pair of exterior coatings of cross linked polyethylene on the exterior, see core 4 and plastic layers 6,7, column 1, line 69-column 2, line 12. The board has a plurality of components attached thereto, see components 28 of the Figures. The ordinary artisan would have understood such a substrate would have been in need of a conformal coating (in order to protect the components attached to the substrate). The reference suggested that conventional boards included polyethylene layers on the exterior. Because it was a conventional material for use in the manufacture of a printed circuit board, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the boards of Reynolds in the process of making the coated boards as set forth above in paragraph 4.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 4 further taken with E.P. 295,694.

The references as set forth above in paragraph 4 taught the claimed coating operation, however they failed to express that the material would have ben disposed vertically subsequent to the coating operation. However, in the art of extrusion coating where the material was coated with a non-contact coating device, it was known at the time the invention was made to employ the techniques of E.P. '694 wherein the coating device did not contact the substrate being coated and wherein the coating was applied to the substrate while the substrate was in a vertical position.

Those skilled in the art would have understood that the coatings of Boger et al for example, would have been capable of being applied while the substrate was being transported in the vertical

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direction and the particular orientation of the device is taken as within the purview of the ordinary artisan lacking any showing of unexpected results as a result of the reorientation of the coating device. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the techniques of E.P. 295,694 to provide for a uniform coating of plastic material upon the substrates as set forth above in paragraph 4.

Information Disclosure Statement

7. The information disclosure statement filed 4-8-98 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

8. PCT '902 listed an article which is not readily available to the examiner. It is requested that applicant supply the same.


Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references to Puletti et al are being cited of interest as they relate to the application of a coating upon a nonwoven in order to provide the same with a barrier. The reference to PCT '902 and Werenicz are being made of record as related to applicant's prior applications.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Aftergut whose telephone number is (703) 308-2069.

JHA
June 3, 1999


JEFF AFTERGUT
PRIMARY EXAMINER
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